



Intel® 41210

Serial to Parallel PCI Bridge

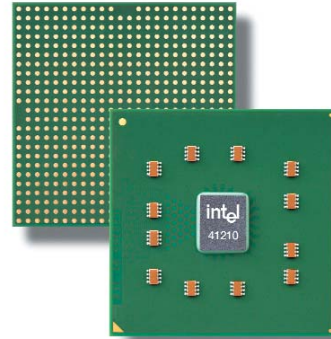
Product Overview

Designed specifically for Host Bus Adapters (HBAs) and add-in cards, the Intel® 41210 Serial to Parallel PCI Transparent Bridge chip connects parallel bus PCI and PCI-X technology-based peripheral card applications directly to the newest generation of high-speed PCI Express serial I/O architecture-enabled system platforms.

The Intel 41210 can be configured with a x4 or x8 lane upstream port connection to host PCI Express slots, and provides two 133 MHz PCI-X bus segments (1 GB/s each) downstream for attaching legacy PCI and/or newer, higher data throughput bandwidth PCI-X devices “behind the bridge” mounted on add-in cards or HBAs.

The result is a powerful and versatile bridge that delivers a distinct time-to-market advantage when adapting existing PCI/PCI-X card designs for connection to the latest PCI Express host systems and embedded platforms.

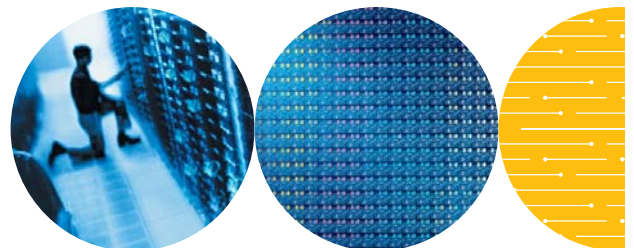
In addition, the 41210 enables multi-channel, high-density board designs with the two available PCI-X bus segments for high-bandwidth, data transfer-intensive application and server I/O configurations (e.g. Fiber Channel, SCSI, iSCSI, and Ethernet). It's also the logical choice for migrating complex, multi-function device cards (i.e., Imaging, Video, or Network Interface Cards) with mixed PCI and PCI-X devices to PCI Express platforms – using the 41210's dual PCI/PCI-X bus segments and 6 bus masters per segment capability.



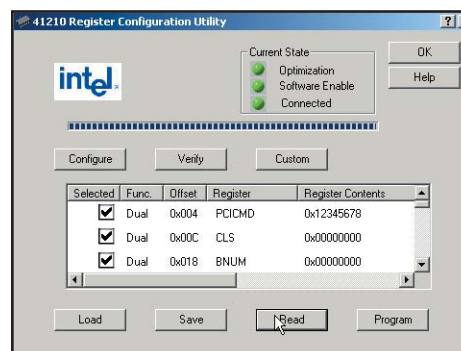
Key Applications

The 41210 PCI Bridge translates from serial PCI Express I/O architecture to PCI-X or PCI parallel bus architecture. It enables quick and relatively simple time-to-market migrations of existing or new PCI-based HBAs or add-in cards planned for PCI Express host system connectivity to take immediate advantage of emerging PCI Express technology, high-performance server, and desktop platforms. Applications include Direct Attached Storage (DAS), Networked Attached Storage (NAS), Storage Area Network (SAN, RAID, networking, communications, graphics, imaging and multi-media HBA or add-in cards equipped with PCI or PCI-X-devices. With the 41210, hardware vendors can maximize their product's available market by porting their PCI/PCI-X based add-in cards to high-performance, serial PCI Express system/slot architecture. The ability to plug in

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Communications



these ported PCI/PCI-X cards directly into PCI Express slots using the 41210 (instead of a standard PCI-X slot) will also provide hardware vendors with performance advantages (i.e., direct PCI Express port attach) over utilizing traditional “bridged” PCI-X slots on PCI Express systems. In short, the 41210 enables vendors to “bridge” their applications to PCI Express architecture as an interim product transition step until native-mode PCI Express device-based applications are developed.



Features

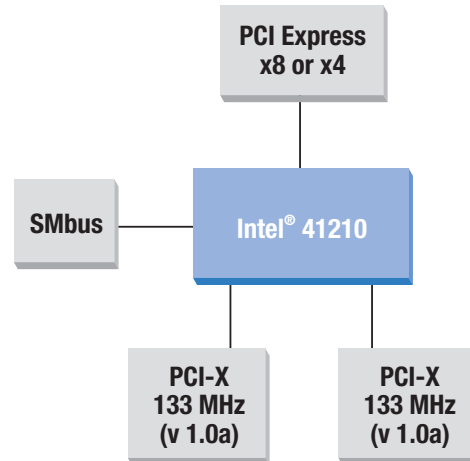
Benefits

Single x8 or x4 port PCI Express* upstream interface	■ Provides 4 or 2 GB/sec, respectively, of high upstream bandwidth to PCI Express-enabled systems
Two independent 64-bit PCI/PCI-X downstream bus segments	■ Supports up to 1 GB/sec per segment (PCI-X v 1.0b) or 533 MB/sec per segment PCI
Direct write/read transfers between PCI/PCI-X bus segments	■ Allows for peer-to-peer transfers between PCI bus segments without invoking the host CPU or PCIE bus segment
Opaque Memory Mode	■ Provides “semi-transparent” operation using private device and/or private memory address space
Arbiter support for 6 masters per PCI-X bus segment	■ Allows ample device attach capability per each segment for high-density HBA or add-in card applications
256 MB maximum payload size	■ Enables efficient data transfer performance characteristics and reduced latency
31x31 mm BGA	■ Compact footprint
PCI Express Hot Plug Capable	■ No disruption to host system platform when inserting or removing add-in cards
SM Bus Port	■ Optional means for initializing the Intel® 41210 or modifying its registers from the secondary PCI/PCI-X bus segment side
Backwards compatibility with PCI v 2.3	■ Supports 64-bit PCI-X 133 MHz, 100 MHz and 66 MHz as well as PCI 66 MHz and 33 MHz for mixed PCI/PCI-X modes and frequency bus/device operation
Register configuration software utility	■ Allows customization of configuration register start-up values and optimization of memory space in the optional I2C microcontroller initialization device via an easy to use graphical interface.

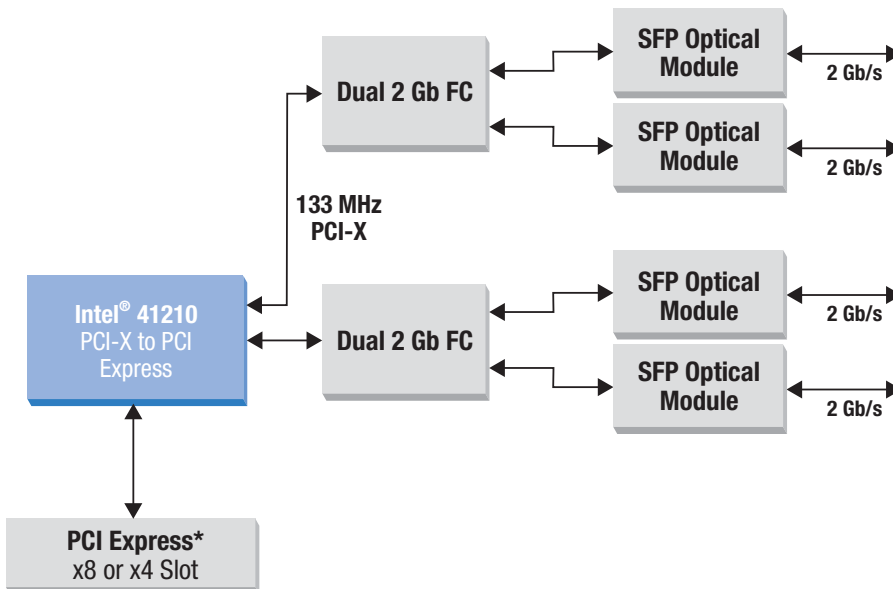
Intel® 41210 Usage Model Example

The Intel 41210 Serial to Parallel PCI Transparent Bridge comes from a long and rich heritage of PCI bridging products pioneered by the Intel Corporation. Millions of PCI-based bridges have been sold by Intel to date. The 41210 offers hardware vendors the assurance and advantages of extensive interoperability and validation testing with existing Intel platforms and PCI Express products. Further, Intel's worldwide product distribution and technical support is second to none. The Intel 41210 has many specific product features and advantages, including its dual PCI-X bus segments for maximum device attach and high-bandwidth data transfer applications. This provides hardware vendors with powerful capabilities and maximum design flexibility when laying out and porting board designs to PCI Express platforms using onboard PCI Express slots.

Intel® 41210 Block Diagram



Intel® 41210 Usage Model Example



Intel Access

Developer's Site:	developer.intel.com
Embedded Intel® Architecture Home Page:	developer.intel.com/design/intarch
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